



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,477	10/27/2003	Shunpei Yamazaki	0553-0118.01	4264

7590 07/29/2008
Edward D. Manzo
Cook, Alex, McFarron, Manzo,
Cummings & Mehler, Ltd.
200 West Adams St., Ste. 2850
Chicago, IL 60606

EXAMINER

PRENTY, MARK V

ART UNIT	PAPER NUMBER
----------	--------------

2822

MAIL DATE	DELIVERY MODE
-----------	---------------

07/29/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/694,477	Applicant(s) YAMAZAKI, SHUNPEI	
	Examiner MARK PRENTY	Art Unit 2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24, 25, 28-30, 33-35, 38, 39, 41, 43, 44, 46, 48, 49, 51, 53, 57-62, 72-74, 78-80, 84 and 86-90 is/are allowed.
- 6) ☒ Claim(s) 63-65, 75-77 and 81-83 is/are rejected.
- 7) ☒ Claim(s) 69-71 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>April 8, 2008</u> | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims pending in the application are 24,25,28-30,33-35,38,39,41,43,44,46,48,49,51,53,57-65,69-84 and 86-90.

This Office Action is in response to the amendment filed on June 13, 2008.

Claims 63, 75 and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,818,083 to Ito together with United States Patent 3,890,632 to Ham et al. (Ham).

As to independent claim 63, Ito discloses a semiconductor device (see the entire patent, including the Fig. 3 disclosure) comprising: a semiconductor film 12 including a source region 12b, a channel forming region 12a, and a drain region 12c; a field oxide film 12d adjacent to side edges of the channel forming region along a channel length direction (see the sentence bridging columns 7 and 8); a floating gate 14 formed over the channel forming region; and a control gate 16 formed over the floating gate.

The difference between claim 63 and Ito is claim 63 further comprises: "a pair of impurity regions formed at side edges of the channel forming region along a channel length direction respectively."

Ham teaches providing a thin film transistor with a pair of impurity regions formed at side edges of the channel forming region along a channel length direction respectively in order to stabilize the transistor's leakage current and threshold voltage (see the entire patent, including the pair of impurity regions 33 and 35 formed at side edges of the channel forming region along a channel length direction respectively).

It would have been obvious to one skilled in this art to provide Ito's thin film transistor with a pair of impurity regions formed at side edges of the channel forming region along a channel length direction respectively in order to stabilize the transistor's leakage current and threshold voltage as taught by Ham.

Claim 63 is thus rejected under 35 U.S.C. 103(a) as being unpatentable over Ito together with Ham.

As to dependent claim 75, Ham's pair of impurity regions is opposite conductivity type of the source and drain regions (see column 4, lines 46-50, for example).

Claim 75 is thus rejected under 35 U.S.C. 103(a) as being unpatentable over Ito together with Ham.

As to dependent claim 81, Ito's semiconductor film is a single crystal silicon film or a polysilicon film (see column 7, lines 30-38).

Claim 81 is thus rejected under 35 U.S.C. 103(a) as being unpatentable over Ito together with Ham.

Claims 64, 76, 82, 65, 77 and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over newly cited United States Patent 5,818,083 together with United States Patent 3,890,632 to Ham et al. (Ham, already of record) and United States Patent 5,814,854 to Liu et al (Liu, already of record).

Independent claim 64 parallels independent claim 63 except that claim 64's semiconductor device is a NOR circuit memory transistor. The explanation of the above rejection of claim 63 under 35 U.S.C. 103(a) as being unpatentable over Ito together with Ham is thus hereby incorporated by reference into this rejection of claim 64 under 35 U.S.C. 103(a) as being unpatentable over Ito together with Ham and Liu.

The difference, therefore, between independent claim 64 and the obvious Ito/Ham device is claim 64's semiconductor device is a NOR circuit memory transistor.

Liu, however, teaches that EEPROM devices are conventionally used to form NOR type circuits (see column 4, lines 1-16).

It would have been further obvious to one skilled in the art use the obvious Ito/Ham EEPROM device in a NOR type circuit because Liu teaches that EEPROM devices are conventionally used to form a NOR type circuit.

Claim 64 is thus rejected under 35 U.S.C. 103(a) as being unpatentable over Ito together with Ham and Liu.

Independent claim 64's dependent claims 76 and 82 parallel independent claim 63's dependent claims 75 and 81 (addressed above), and are thus also rejected under 35 U.S.C. 103(a) as being unpatentable over Ito together with Ham and Liu.

Independent claim 65 parallels independent claim 63 except that claim 65's semiconductor device is a NAND circuit memory transistor. The explanation of the above rejection of claim 63 under 35 U.S.C. 103(a) as being unpatentable over Ito together with Ham is thus hereby incorporated by reference into this rejection of claim 65 under 35 U.S.C. 103(a) as being unpatentable over Ito together with Ham and Liu.

The difference, therefore, between independent claim 65 and the obvious Ito/Ham device is claim 65's semiconductor device is a NAND circuit memory transistor.

Liu, however, teaches that EEPROM devices are conventionally used to form NAND type circuits (see column 4, lines 1-16).

It would have been further obvious to one skilled in the art use the obvious Ito/Ham EEPROM device in a NAND type circuit because Liu teaches that EEPROM devices are conventionally used to form a NAND type circuit.

Claim 65 is thus rejected under 35 U.S.C. 103(a) as being unpatentable over Ito together with Ham and Liu.

Independent claim 65's dependent claims 77 and 83 parallel independent claim 63's dependent claims 75 and 81 (addressed above), and are thus also rejected under 35 U.S.C. 103(a) as being unpatentable over Ito together with Ham and Liu.

Claims 24, 25, 28-30, 33-35, 38, 39, 41, 43, 44, 46, 48, 49, 51, 53, 57-62, 72-74, 78-80, 84 and 86-90 are allowable over the prior art of record.

Claims 69-71 are objected to as being dependent upon a rejected base claim, but would be allowable over the prior art of record if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The applicant's arguments as to independent claims 63-65 are incorrect.

First, the applicant's argument: "Applicant is amending independent Claim 63 to recite the feature of 'a pair of impurity regions formed at side edges of the channel forming region along a channel length direction respectively.' It is respectfully submitted that this feature is not disclosed or suggested in the cited references," is incorrect. Ham clearly teaches this claim feature, as explained in the rejection of independent claim 63.

Furthermore, the applicant's argument: "As shown in Fig. 3 in Ito, field oxide 12d is provided adjacent to source region 12b and drain region 12c, not channel region 12a," is misplaced. Specifically, Ito's Fig. 3 does not show field oxide 12d adjacent to the side edges of channel region 12a because the Fig. 3 cross-sectional view is taken through the channel region in the channel length direction, and thus does not illustrate the field oxide 12d relative to the side edges of channel region 12a in the relevant

channel width direction (the direction in and out of the page of Fig. 3's cross-sectional view). In any event, as explained in the rejection of independent claim 63, Ito's field oxide 12d is adjacent to side edges of the channel region 12a along the channel length direction (see the sentence bridging columns 7 and 8).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Registered practitioners can telephone the examiner at (571) 272-1843. Any voicemail message left for the examiner must include the name and registration number of the registered practitioner calling, and the Application/Control (Serial) Number. Technology Center 2800's general telephone number is (571) 272-2800.

/MARK PRENTY/

Primary Examiner, Art Unit 2822